Listing of Claims:

1. (currently amended) A system for temperature control of a nucleic-acid probe substrate, which controls the temperature to the substrate surface of which a plurality of nucleic-acid probes containing single-stranded nucleic acid fragments having a complementary sequence in respect to a target DNA have been immobilized in order that the target DNA contained in a specimen is detected according to hybridization; the system comprising:

a heat conduction ~~means~~ member comprising a heat-conductive material disposed on the back of the substrate to the substrate surface of which the plurality of single-stranded nucleic acid fragments have been immobilized, and in contact with the back of the substrate;

a ~~heating means or cooling means~~ heater or cooler which is provided in contact with the heat-conductive material; and

a ~~means~~ controller for controlling the amount of heat flowing across the ~~heating means or cooling means~~ heater or cooler and the heat-conductive material, to control the temperature of the heat-conductive material;

the temperature of the substrate disposed in contact being controlled through the temperature control of the heat-conductive material.

2. (currently amended) A system for temperature control of a nucleic-acid probe substrate, which controls the temperature of a substrate to the substrate surface of which a plurality of nucleic-acid probes containing single-stranded nucleic acid fragments having a complementary sequence in respect to a target DNA have been immobilized in order that the target DNA contained in a specimen is detected according to hybridization; the system comprising:

a heat conduction ~~means~~ member comprising a heat-conductive material disposed on the surface of the substrate to the substrate surface of which the plurality of single-stranded nucleic acid fragments have been immobilized, facing, and in contact with, the substrate surface, partly leaving a space for feeding the specimen thereinto;

a ~~heating means or cooling means~~ heater or a cooler which is provided in contact with the heat-conductive material; and

a ~~means~~ controller for controlling the amount of heat flowing across the ~~heating means or cooling means~~ heater or cooler and the heat-conductive material to control the temperature of the heat-conductive material;

the specimen fed into the space and the substrate surface, which are in contact with the heat-conductive material, being temperature-controlled through the temperature control of the heat-conductive material.

3. (currently amended) The system according to claim 1 ~~or 2~~, wherein said heat-conductive material is formed of any one of a metal and a resin or a composite of these two or more.

4. (currently amended) A method for detecting genes by utilizing as a detection means a substrate to the substrate surface of which a plurality of nucleic-acid probes containing single-stranded nucleic acid fragments having a complementary sequence in respect to a target DNA have been immobilized in order that the target DNA contained in a specimen is detected according to hybridization; the method comprising:

disposing a heat-conductive material on the back of the substrate to the substrate surface of which the plurality of single-stranded nucleic acid fragments have been immobilized, and in contact with the back of the substrate;

disposing a ~~heating means or cooling means~~ heater or a cooler in contact with the heat-conductive material; and

providing a temperature ~~control means~~ controller for controlling the amount of heat flowing across the ~~heating means or cooling means~~ heater or cooler and the heat-conductive material to control the temperature of the heat-conductive material;

the detection being operated while the substrate standing bonded sandwichedly and the specimen standing in contact with the substrate

surface are temperature-controlled through the temperature control of the heat-conductive material by the temperature ~~control means~~ controller during the operation of gene detection.

5. (currently amended) The method according to claim 4, wherein, in a plurality of steps involved in the gene detection operation, said substrate and said specimen standing in contact with the substrate surface are temperature-controlled; and

the temperature in the plurality of steps requiring temperature control is successively controlled by the temperature ~~control means~~ controller which utilizes said ~~heating means~~ heater.

6. (currently amended) The method according to claim 4, wherein, in a plurality of steps involved in the gene detection operation, said substrate and said specimen standing in contact with the substrate surface are temperature-controlled; and

the temperature in the plurality of steps requiring temperature control is successively controlled by the temperature ~~control means~~ controller which utilizes said ~~cooling means~~ cooler.

7. (original) The method according to claim 4, wherein, as said heat-conductive material, which is utilized for the temperature control the substrate and of the specimen standing in contact with the

substrate surface, a heat-conductive material is used which is formed of any one of a metal and a resin or a composite of these two or more.

8. (currently amended) A method for detecting genes by utilizing as a ~~detection means~~ detector a substrate to the substrate surface of which a plurality of nucleic-acid probes containing single-stranded nucleic acid fragments having a complementary sequence in respect to a target DNA have been immobilized in order that the target DNA contained in a specimen is detected according to hybridization; the method comprising:

disposing a heat-conductive material on the surface of the substrate to the substrate surface of which the plurality of single-stranded nucleic acid fragments have been immobilized, facing, and in contact with, the substrate surface, partly leaving a space for feeding the specimen thereinto;

disposing a ~~heating means or cooling means~~ heater or a cooler in contact with the heat-conductive material; and

providing a temperature ~~control means~~ controller for controlling the amount of heat flowing across the heating means or cooling means and the heat-conductive material to control the temperature of the heat-conductive material;

the detection being operated while the specimen fed into the space and the substrate surface, which are in contact with the

heat-conductive material, being temperature-controlled through the temperature control of the heat-conductive material by the temperature ~~control means~~ controller during the operation of gene detection.

9. (currently amended) The method according to claim 8, wherein, in a plurality of steps involved in the gene detection operation, said substrate and said specimen standing in contact with the substrate surface are temperature-controlled; and

the temperature in the plurality of steps requiring temperature control is successively controlled by the temperature ~~control means~~ controller which utilizes said ~~heating means~~ heater.

10. (currently amended) The method according to claim 8, wherein, in a plurality of steps involved in the gene detection operation, said substrate and said specimen standing in contact with the substrate surface are temperature-controlled; and

the temperature in the plurality of steps requiring temperature control is successively controlled by the temperature ~~control means~~ controller which utilizes said ~~cooling means~~ cooler.

11. (original) The method according to claim 8, wherein, as said heat-conductive material, which is utilized for the temperature control of the substrate and the specimen standing in contact with the

substrate surface, a heat-conductive material is used which is formed of any one of a metal and a resin or a composite of these two or more.

12. (currently amended) A probe substrate temperature control system for controlling the temperature of a probe substrate to the substrate surface of which a plurality of probes bindable specifically to a target substance have been immobilized in order to detect the target substance; the system comprising:

a heat conduction ~~means~~ member comprising a heat-conductive material disposed on the side opposite to the surface of the probe substrate to which surface the detecting target substance have been immobilized, and in contact with the back of the substrate;

a ~~heating means or cooling means~~ heater or cooler which is provided in contact with the heat-conductive material; and

a ~~means~~ temperature controller for controlling the amount of heat flowing across the ~~heating means or cooling means~~ heater or cooler and the heat-conductive material to control the temperature of the heat-conductive material;

the temperature of the substrate disposed in contact being controlled through the temperature control of the heat-conductive material.

13. (original) A probe substrate comprising:

a substrate;

a plurality of probes bindable specifically to a target substance which have been immobilized to the substrate surface; and

a heat-conductive material for controlling the temperature of the substrate; the material being disposed in contact with the back of the substrate.

14. (currently amended) A probe substrate temperature control system for controlling the temperature of a probe substrate to the substrate surface of which a plurality of probes bindable specifically to a target substance have been immobilized in order to detect the target substance; the system comprising:

a heat conduction ~~means~~ member comprising a heat-conductive material disposed on the surface of the substrate to the substrate surface of which the plurality of probes have been immobilized, facing, and in contact with, the substrate surface, partly leaving a space for feeding the specimen thereinto;

a ~~heating means or cooling means~~ heater or cooler which is provided in contact with the heat-conductive material; and

a ~~means~~ temperature controller for controlling the amount of heat flowing across the ~~heating means or cooling means~~ heater or cooler and the heat-conductive material to control the temperature of the heat-conductive material;

the temperature of the substrate disposed in contact being controlled through the temperature control of the heat-conductive material.

15. (original) A probe substrate comprising:

a substrate;

a plurality of probes bindable specifically to a target substance which have been immobilized to the substrate surface; and

a heat-conductive material for controlling the temperature of the substrate; the material being

disposed on the surface of the substrate to the substrate surface of which the plurality of probes have been immobilized, facing, and in contact with, the substrate surface, partly leaving a space for feeding the specimen thereinto.

16. (new) The system according to claim 2, wherein said heat-conductive material is formed of any one of a metal and a resin or a composite of these two or more.